

Réalisation du site Web de

ENGINE – Workpackage 2

Information and Dessimination System

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Objet de ce document :

ENGINE est un projet européen pour la coordination de la R&D en géothermie moyenne et haute énergie en Europe qui sera lancé le 10/11/2005. Ce projet fédère 32 partenaires de 17 pays. Le workpackage 2 de ENGINE est dédié à l'information des partenaires du projet et du public. Le délivrable principal de ce workpackage est un site Web collaboratif qui servira de support à l'information.

Le présent document est une description des services attendus du site Web de ENGINE et servira de base pour son développement.

Une présentation du projet européen ENGINE se trouve en annexe.

Vie du projet ENGINE :

Le projet ENGINE se déroulera du dernier trimestre 2005 au 2^{ème} trimestre 2008. Il sera jalonné par 3 conférences et 7 workshops. Ces réunions seront destinées à établir l'état d'avancement du projet et à définir les actions à venir.

Ainsi chaque participant assistera à 5 réunions en 2 ans ½ :

- 3 conférences (état des lieux),
- 2 workshops par workpackage (définition d'expertises)

La réussite de l'organisation des conférences et des workshops est la priorité n°1 du projet. Cet objectif sera également prioritaire pour la réalisation du site Web.

Actions préalables à la réalisation du site Web

Le site Web sera a priori hébergé au BRGM. Il conviendra de

- demander l'ouverture d'une adresse du type « www.engine.org »,
- s'assurer qu'un serveur peut héberger ce site collaboratif dans de bonnes conditions d'accès et de performance,
- choisir l'outil de développement des pages du site. La réflexion préliminaire s'oriente vers l'utilisation de Twiki www.twiki.org

Un prototype sera réalisé pour la réunion de lancement du projet du 10/11/2005. Le site devra être opérationnel pour l'organisation de la conférence de lancement qui aura lieu au 1^{er} semestre 2006. Le site sera présenté à l'occasion de cette conférence.

Structure du site Web

Langue

Le contenu du site sera en anglais.

Formalités d'accès

Le site Web du projet ENGINE sera de type collaboratif. Une partie sera accessible au public. Une autre sera réservée aux partenaires du projet. Suivant les autorisations dont ils disposeront, les

partenaires pourront modifier interactivement le contenu des pages du site. Il est prévu que chaque workpackage leader gère lui-même la partie du site qui concerne son module.
De façon à établir des statistiques, un outil permettra de tracer le nombre et la provenance des connexions ainsi que les téléchargements réalisés.

Découpage du site

Une page d'accueil présentera le projet.

Une barre en haut toujours visible permettra de revenir à la page d'accueil et indiquera les mentions légales.

Une barre à gauche toujours visible permettra de naviguer dans les différentes rubriques qui sont présentées ci-après.

Organisation des conférences et des workshops

Le site Web sera un support à l'organisation des conférences et des workshops. Il devra permettre de :

- S'informer sur les dates et les programmes des réunions passées et à venir.
- S'informer sur les lieux des réunions passées et à venir. Un modèle est à prévoir pour la page décrivant la situation géographique, l'accès, les hébergements d'un lieu de réunion.
- S'inscrire à la réunion. Un modèle de bulletin d'inscription est à définir.
- Soumettre des résumés étendus pour les réunions. Un comité de lecture validera les résumés étendus. Prévoir des relances automatiques pour les membres du comité de lecture.
- De consulter et de télécharger les comptes-rendus des réunions passées. Ces proceedings seront également imprimés pour le jour de la réunion (150 ex. par conférence et 50 ex. par workshop). Prévoir une collaboration avec brgmEditions ?

Données et modèles

Le site n'est pas destiné à héberger des bases de données ou de modèles. Cependant des pages statiques de présentation associées à des liens vers d'autres sites permettront d'accéder à ces informations.

Médias

Cette rubrique sera destinée au grand public et aux journalistes. Pour chaque organisme partenaire, une page présentera son projet phare. Des photos, films ou reportages pourront venir illustrer le propos. On veillera au vocabulaire employé pour que le contenu de cette rubrique soit accessible à tous.

Bulletin mensuel

Un bulletin mensuel sera construit au fur et à mesure par les partenaires en utilisant les fonctionnalités collaborative du site. Après avoir été validé, il sera envoyé par email à tous les membres de la liste de diffusion. Le bulletin courant ainsi que les archives seront disponibles au téléchargement.

Liste de diffusion

Les nouveautés sur le site, le bulletin mensuel et les annonces générales seront envoyées à cette liste de diffusion. Les partenaires du projet en feront automatiquement partie. Des personnes extérieures pourront également s'y inscrire.

Forum

Un forum réservé aux participants leur permettra de communiquer entre eux.

Recherche

Une fonction permettra de rechercher

- des mots dans tous les documents publiés sur le site (comptes-rendus, articles, bulletins, etc.)
- des mots clés associés aux liens qui pointent vers des ressources sur d'autres sites.

Partenaires :

La liste des partenaires du projet avec une phrase de présentation, un logo et une url.

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| ENGINE Partner and internet site |
| BRGM |
| http://www.brgm.fr |
| A French Public Institution responsible for mobilising the Earth Sciences in the sustainable management of natural resources and the subsurface domain |

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|--|
| GFZ http://www.gfz-potsdam.de The National German Research Centre for Earth Sciences combining all solid earth science fields including geodesy, geology, geophysics, mineralogy and geochemistry, in a multidisciplinary research centre |
| ISOR http://www.isor.is A service and research institute providing specialised services to the Icelandic power industry, the Icelandic government and foreign companies in the field of geothermal sciences and utilisation |
| SIEP B.V. http://www.shell.com/eandp-en One of the Royal Dutch/Shell Group of Companies recognised as a leading technology innovator in the oil and gas industry and many of these innovations are applicable as well to enhanced geothermal activities |
| TNO http://www.tno.nl The central geoscience institute in the Netherlands for information and research to promote the sustainable management and use of the subsurface and its natural resources |
| IGR DSC RAS the Institute for Geothermal Research of the Daghestan Scientific Centre of Russian Academy of Sciences |
| IGG http://www.igg.cnr.it Institute of the Italian National Research Council (CNR) for research in the field of Earth sciences and resources |
| CFG Services An engineering company, subsidiary of BRGM, conducting high and medium enthalpy geothermal projects from the exploration phase to the field development |
| IE http://www.ie-leipzig.de An interdisciplinary non-profit research company working on topics in the fields of energy, environment and water both theoretically and practically |
| ELTE http://teo.elte.hu/fs/envibase.html The Geophysical Department of the Eotvos University (ELTE), a unique know-how in building and processing data bases concerning the structure and thermal budget of the European crust |
| CNRS http://eost.u-strasbg.fr A cluster of 10 laboratories of the CNRS in the framework of the HDR Soultz experiment |
| GGA-Institute http://www.gga-hannover.de German, independent, non-university research institute for applied geosciences, conducting research in the field of physical geosciences |
| GEIE "EMC" http://www.soultz.net A group involving 3 companies operating in the domains of power generation and/or distribution (Electricité de France, Electricité de Strasbourg, Pfalzwerke) and a servicing company (Bestec GmbH). |
| IGGL http://www.geo.lt The National Lithuanian Research Institute for Earth Sciences, involved in the development of geothermal projects and regional assessment of the geothermal energy potential |
| MeSy http://www.mesy-online.de MeSy is a SME that is an active partner of the European HDR Soultz-sous-Forêts project and has contributed with rock physics, rock mechanics, reservoir hydraulics and innovated technical developments to the present status of this project |
| VUA http://www.ises.nu The largest concentrated research unit in the field of integrated sedimentary basin studies, continental margins and environmental tectonics in Europe |
| CRES http://www.cres.gr The national coordination centre of Greece on renewable energy technologies, including geothermal energy |
| NSCRD http://www.demokritos.gr A research institute specializes among others in the field of sorption and transport phenomena in porous materials |
| GPC http://www.gpc-france.com A consulting engineers bureau and service company created in 1989, from a nucleus of professionnals experienced in exploration and production of underground fluids with a view to promote new drilling/completion/production technologies |
| IFE http://www.ife.no It represents state-of-the-art in Europe (and world wide) integrated solutions for tracer technology activities within petroleum sector including following areas on both laboratory and field scales |
| PGI http://www.pgi.gov.pl The main research centre for the Earth Sciences in Poland, on behalf of the Ministry of Environment |

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| <p>GEUS http://www.geus.dk A research and advisory institute under the Danish Ministry for the Environment providing R&D and advisory services for government agencies, local authorities and private enterprises in Denmark as well as internationally</p> |
| <p>UOR http://www.uoradea.ro A state university established under this name in 1990, including the Geothermal Research Centre, the International Geothermal Training Centre</p> |
| <p>GEMRC IPE RAS http://www.igemi.troitsk.ru One of the World's leading centres of electromagnetic studies of the Earth</p> |
| <p>IVTRAN A leading research institute of the Russian Academy of Sciences in field of physical and technical problems of energy, experienced in the development and investigation of advanced energy systems, including geothermal energy installations</p> |
| <p>Joint Stock Company "Intergeotherm" http://www.gesa.ru A private firm that has constructed a series of Geothermal Power Plants in Russian Federation, Latin America (Nicaragua, Salvador, Mexico, etc) and to participate in implementing geothermal projects in Latin America, Yugoslavia, Russian Federation (Kamchatka).</p> |
| <p>DHMA http://www.dhm.ch http://www.geothermal-energy.ch An association engaged in planning a pilot EGS plant in the city of Basel</p> |
| <p>GGEOWATT AG http://www.geowatt.ch A private company that offers integrated and customised engineering and numerical solutions of high quality to projects in the domains of Geothermal Energy and Hydrogeology</p> |
| <p>ORME Jeothermal A.S. http://www.ormejeothermal.com.tr A private firm that is one of the top three companies in the world regarding geothermal district heating systems, including feasibility detailed engineering studies, construction and operation.</p> |
| <p>IGME http://www.igme.es An institution for the study of the Spanish territory geology, the drawing of a national geological map, the reconnaissance of mineral deposits and the study of subterranean waters</p> |
| <p>CERTH http://www.certh.gr An Institute for the development of new techniques and assistance in technology transfer for upgrading the utilisation of national energy resources and the optimisation of industrial processes</p> |

Sites connexes :

Cette rubrique permettra d'accéder à des sites en rapport avec ENGINE. En voici une liste préliminaire :

- www.geothermal-energy.org
International Geothermal Association
- www.egec.org
European Geothermal Energy Council
- www.geothermie.de
portail sur la géothermie
- www.geothermie.de/groundhit
projet européen sur la géothermie basse énergie
contacts BRGM : A. Desplan, F. Jaudin
- camelia.ltt.rwth-aachen.de
Concerted Action Multigeneration Energy Systems with Locally Integrated Applications
- www.geodynamics.com.au
site Australien sur le projet du Cooper Basin (voir l'explication du HDR)
- www.sanner-geo.de
Compagnie de Burkhard Sanner

Structure de l'arborescence du site Web de ENGINE

L'aspect général du site sera équivalent à ceux de BioMine (<http://biomine.brgm.fr/>) ou BioShale (<http://bioshale.brgm.fr/>).

Page d'accueil – Cadre du haut

Ce cadre sera toujours visible.

Sur la même ligne :

- Logo ENGINE avec lien vers la page d'accueil (présente page)
- Titre du site : ENhanced Geothermal Innovative Network for Europe
- Drapeau UE avec lien vers le site de l'UE

Page d'accueil – Cadre central

Du vers le bas :

- Titre : Co-ordination action for the development of Unconventional Geothermal Resources and Enhanced Geothermal Systems
- Sous-titre : supported by the 6th Research and Development framework of the European Union
- Illustration : logos des 32 partenaires géographiquement positionnés sur fond de carte de l'Europe. Chaque logo pointe vers le site du partenaire dans une nouvelle fenêtre.
- Une phrase mentionnant une nouveauté et pointant vers la page correspondante dans le site.
→ "Geothermal heating for the new hospital in Clermont-Ferrand (France)" pointant vers la réalisation Copgen de la rubrique média.

Page d'accueil - Menu de gauche

Les titres en gras correspondent aux noms des items. Un titre suivi de <liste> signifie que cette liste apparaît au survol de l'item. Chaque élément de la liste ouvre ensuite la page qui est décrite. Dans le cas contraire, l'item ouvre directement une page.

ENGINE for beginners

<liste> :

- Overview
- Structure

Overview :

The ENGINE project (ENhanced Geothermal Innovative Network for Europe) is a co-ordination action supported by the 6th Research and Development framework of the European Union. Its main objective is the co-ordination of the present research and development initiatives for Unconventional Geothermal Resources and Enhanced Geothermal Systems, from resource investigation and assessment stage through to exploitation monitoring.

The Co-ordination Action will provide (1) an updated framework of activities concerning geothermal energy in Europe, including the integration of scientific and technical know-how and practices, the evaluation of socio-economic and environmental impacts; (2) the definition of innovative concepts for investigation and use of Unconventional Geothermal Resources and Enhanced Geothermal Systems; groups of experts will present a "Best Practice Handbook"; (3) a scientific and technical "European Reference Manual" including the information and dissemination systems developed during the Co-ordination Action.

The links established between research and development teams, national development programmes, industrial partners and international agencies will be used to promote the geothermal energy as a major renewable and sustainable source of energy and to propose innovative high-level medium- to longer-term research projects

Structure :

Schéma simplifié de la figure 1 ci-dessous sans les descriptions des workpackages. La description s'affiche en survolant le nom du workpackage.

ENGINE Partners

Une page contenant la liste déroulante des 32 partenaires et une phrase de présentation d'un partenaire avec un logo et une url. La sélection d'un élément de la liste met à jour la présentation (cf. Biomine consortium).

→ voir liste ci-dessus avec les noms des partenaires, la phrase de présentation et l'url

Conferences and Workshops

La porte d'entrée vers l'espace de gestion des réunions.

Media

Une présentation de projets phares des partenaires, une page maxi par partenaire.

→ Copgen pour le BRGM

Newsletters

<liste> contenant les titres des bulletins mensuels par ordre chronologique décroissant. Chaque item ouvre le bulletin correspondant.

Forum

Le lien vers le forum réservé aux partenaires.

Data and Models

Une page listant des réalisations des partenaires avec les liens vers ces réalisations.

→ Copgen pour le BRGM

Reference documents

Une page présentant les documents importants au cours de la vie du projet tels que le descriptif du projet et les comptes-rendus des réunions.

→ pdf présentation résumée du projet (l'annexe ci-dessous)

→ pdf complet du projet

Search

Un moteur pour effectuer des recherche dans le contenu du site.

Mailling list

Une page permettant de s'inscrire pour recevoir le bulletin mensuel et les annonces de nouveautés.

Links

Les liens autres que les url des partenaires.

→ voir liste ci-dessus

Annexe – Présentation du projet ENGINE

ENGINE co-ordination action ENhanced Geothermal Innovative Network for Europe

P. Ledru, Research Coordinator

1. Context

The development of renewable and sustainable energy will have a major impact on World economics and its sustainable development. The challenge defined in the 6th framework is to reverse the present pattern of development in order to achieve a truly sustainable energy system, one that preserves the equilibrium of ecosystems and encourages economic development. In line with the Kyoto protocol implementation, an EU directive has been established that aims, by year 2010, to double the contribution of renewable energy to total energy consumption from 6 to 12%, and to reduce greenhouse gases and pollutant emission by 15% (up cited). Finally, the Green Paper –Towards a European strategy for the security of energy supply– published in 2001, underlines that the EU will become increasingly dependent on external energy sources (70% in 2030), and that at present it is not in a position to respond to the challenge of climate change and meet its commitments, notably under the Kyoto Protocol. It is also noted that the development of certain renewable energy sources calls for major efforts in terms of research and technological development.

The contribution of geothermal energy will be significant in achieving the objectives of the European Commission mentioned above. The “heat engine” of the earth, i.e. geothermal energy, constitutes a sustainable and renewable source of energy if appropriate exploitation schemes are appropriately implemented. The energy available within the uppermost 9 km of the Earth’s crust is estimated at 50,000 times the energy provided by oil and gas resources throughout the World, 3.3×10^{15} tons of oil equivalent. According to the IEA World Energy Outlook 2002, geothermal energy is predicted to grow at an annual rate of 4% until 2010. The White Paper for a Community Strategy and Action Plan (1997) expects electricity production to double from 500 to 1000 MW and an increase in heat production of geothermal origin from 750 to 2.5 MWth.

The access to Unconventional Geothermal Resources is a key factor for achieving these objectives. The European Hot Dry Rock (HDR) project in Soultz proved that the extraction of geothermal energy from HDR is technically feasible. This implies that **for the first time in human history**, the vast amounts of the heat content of the upper crust have been made available, although still with elevated costs. A rough calculation of the extractable amount of geothermal energy (technical geothermal potential) made for Greece, indicates that the technical geothermal potential for electricity generation has been estimated as around 21.000 MWe of installed power (for Greece only), corresponding to twice the needs for power production of the country for 1000 years of plant life. Furthermore, recent work of the “office of technology assessment at the German parliament (TAB)” and in particular on the report No 84 “Possibilities for geothermal electricity generation in Germany”, shows that with present technology geothermal energy can supply 50% of electricity needs of Germany for a period of 1000 years. Therefore, when the economic barriers are overcome, geothermal energy can play a dominant role towards the energy supply of EU and humanity. Initial estimates indicate that 70% of world energy needs can be covered by geothermal energy using present technology.

The potential of geothermal energy for Europe is strongly modified from a socio-economic point of view with the arrival of the new members, some of them presenting high resource potential and all of them having urgent needs in terms of heat-production systems and, to a lesser extent, electricity production. Geothermal energy could easily be integrated with other renewable energies into a perspective of sustainable development for Europe, and applied to emergent countries with crucial needs in energy.

The society and policy objectives mentioned above are highly ambitious. In order to meet with these, major research investment is needed as many gaps have to be filled and barriers overcome to render geothermal energy competitive and thus attractive for the industry. However, it is clear that this investment will only come about if the scientific community is able to (1) present credible research

projects that integrate the know-how and best practices, and (2) demonstrate its ability to be federated and complementary in a common conceptual approach.

2. Objectives of the ENGINE project (ENhanced Geothermal Innovative Network for Europe)

The contribution of geothermal energy is a key factor to the successful achievement of the objectives of the European Commission concerning the development of renewable and sustainable energy. The concept of Unconventional Geothermal Resources and in particular Enhanced Geothermal Systems examines ways of increasing the potential of geothermal power generation through (i) exploring new types of reservoirs for heat exchange (Hot Dry Rock, supercritical fluids..), (ii) enlarging the extent of productive geothermal fields by stimulating permeability, (iii) enhancing the viability of current and potential hydrothermal areas by stimulation technology and improving thermodynamic cycles.

The ENGINE project (ENhanced Geothermal Innovative Network for Europe) is a co-ordination action supported by the 6th Research and Development framework of the European Union. Its main objective is the co-ordination of the present research and development initiatives for Unconventional Geothermal Resources and Enhanced Geothermal Systems, from resource investigation and assessment stage through to exploitation monitoring. The Co-ordination Action will provide (1) an updated framework of activities concerning geothermal energy in Europe, including the integration of scientific and technical know-how and practices, the evaluation of socio-economic and environmental impacts; (2) the definition of innovative concepts for investigation and use of Unconventional Geothermal Resources and Enhanced Geothermal Systems; groups of experts will present a "Best Practice Handbook"; (3) a scientific and technical "European Reference Manual" including the information and dissemination systems developed during the Co-ordination Action.

The links established between research and development teams, national development programmes, industrial partners and international agencies will be used to promote the geothermal energy as a major renewable and sustainable source of energy and to propose innovative high-level medium- to longer-term research projects

3. Organisation of the ENGINE co-ordination action

To promote an efficient network of geothermal activities, the Co-ordination Action will define, organise and manage joint and common initiatives through :

- an Integration Phase, i.e. a bottom-up and federative strategy aimed at providing an updated framework of activities concerning geothermal energy in Europe and developing motivation within the scientific and technical community by exchanging experiences and sharing practices;
- a Synthesis Phase; i.e. an expertise strategy for defining the best practices and priorities for research investment. The expert groups will perform specific studies and strengthen links between the geothermal community and financial and political institutions.

The breakdown structure of the project is presented (Fig. 1, 2). Its duration is estimated to 30 months and it has been funded with 2 Millions €. Among the main actions, 3 general conferences (lauchning, mid-term and final) will be organised and 7 specialised workshops will present the most innovative concepts, review the best practices, identify gaps and barriers and define new projects on the following items:

- *Defining, exploring, imaging and assessing reservoirs for potential heat exchange*
- *Exploring Supercritical fluid reservoir: a new challenge for geothermal energy*
- *Stimulation of reservoir and induced microseismicity*
- *Drilling cost effectiveness and feasibility of high-temperature drilling*
- *Electricity generation, combined heat and power*
- *Increasing policy makers awareness and the public acceptance*
- *Risk analysis for development of geothermal energy*

All information collected during the preparation and realisation of these meetings will be available on the web site of the co-ordination Action.

The ENGINE co-ordination action is composed of 31 partners representing 16 European countries and including 6 private companies. The first group of partner has a broad knowledge covering large aspects of the geothermal energy. It comprises **BRGM** (France), co-ordinator of the ENGINE project, **CFG SERVICES** (France), **GeoForschungsZentrum Potsdam** (GFZ, Germany), **ISlenskar ORkurannsoknir** (ISOR, Iceland GeoSurvey), **Centre for Renewable Energy Source** (CRES,

Greece), the **Geological Survey of Denmark and Greenland** (GEUS, Denmark), **Shell International Exploration and Production B.V.** (SIEP B.V., Netherlands).

The second group of partner has a knowledge covering mainly the exploration and drilling and reservoir assessment: the **Instituto di Geoscienze e Georisorse** (IGG, Italy), the **Department of Geophysics of the Eotvos University** (ELTE, Hungary), the Institute of Earth Sciences, Dept. of Tectonics, of the **Vrije Universiteit Amsterdam** (VUA, Netherlands), the **Groupement Européen d'Intérêt Economique "Exploitation Minière de la Chaleur"** (GEIE "EMC", an international consortium operating on the site of Soultz-sous-Forêts, France), the **Panstwowy Instytut Geologiczny** (PGI, Polish Geological Institute, Poland), **Tsentr geoelektromagnitnykh issledovaniï Instituta fiziki zemli Rossiskoi akademii nauk** (GEMRC IPE RAS, GEoelectromagnetic Research Center of the Institute of the Physics of the Earth, Russian Academy of Sciences , Russian Federation), the **Geologijos Ir Geografijos Institutas** (IGGL, Institute of Geology and Geography, Lithuania).

A large group of partners has a large experience in drilling and reservoir assessment, exploitation and impact of the geothermal energy. It is composed of the **Netherlands Organisation For Applied Scientific Research** (TNO, Netherlands), ten laboratories of the French **CNRS** (France) involved in the HDR Soultz experiment, **Geoproduction Consultants** (GPC, France), the Chemical Process Engineering Research Institute (CPERI) of the **Center for Research and Technology-Hellas (CERTH)**, the Environmental Research Laboratory of the **National Centre for Scientific Research "Demokritos"** (NCSR, Greece), the **Institutt for Energiteknikk** (IFE, Institute for Energy Technology, Norway), the **Deep Heat Mining Association** (DHMA, Internatioanl Consortium), The company **Geowatt AG**, the **Instituto Geológico y Minero de España** (IGME Geological and Mining Institute of Spain, Spain), the **Leibniz Institute for Applied Geosciences** (GGA-Institute, Germany)

Another group of partners are mainly involved in the development and management of exploitation and in impact studies of the geothermal energy: the **Institut für Energetik und Umwelt gGmbH** (IE, Institute for Energy and Environment, Germany), the **Institut vysokikh temperatur Rossyiskoi akademii nauk** (IVTRAN, Institute for high temperatures, Russian academy of sciences, Russian Federation), the Institute for Geothermal Research of the Daghestan Scientific Centre of Russian Academy of Sciences (IGR DSC RAS, Russian Federation) and 3 private firms, **ORME JEOTERMAL A.S.**, operating in Turkey, **Intergeotherm-M Stock Company** (Intergeotherm-M SC, Russian Federation), involved in the construction of geothermal plants worldwide and **MeSy GeoMessSysteme GmbH** (MeSy, Germany) partner of the European HDR Soultz-sous-Forêts project, the **University of Oradea** (UOR, University of Oradea, Romania).

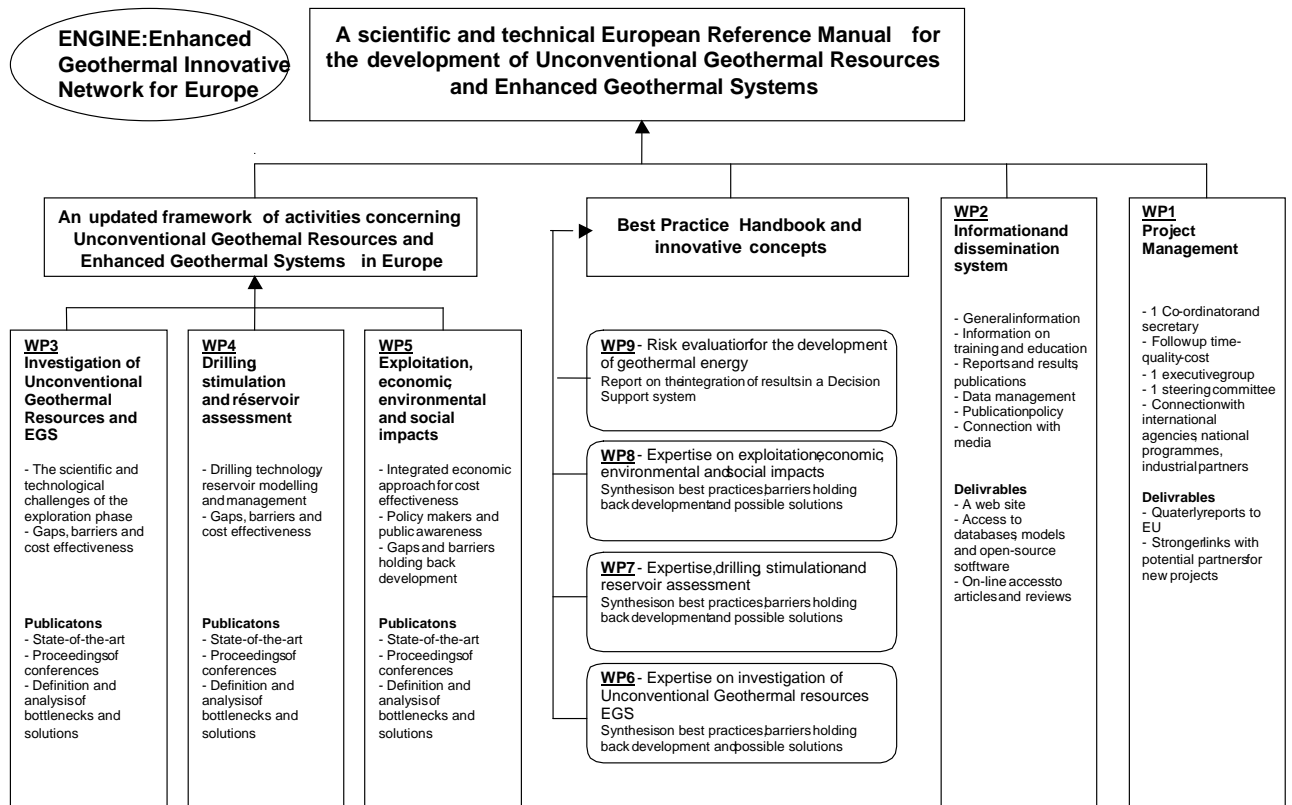


Figure 1. Breakdown of the ENGINE structure, brief description of Workpackages

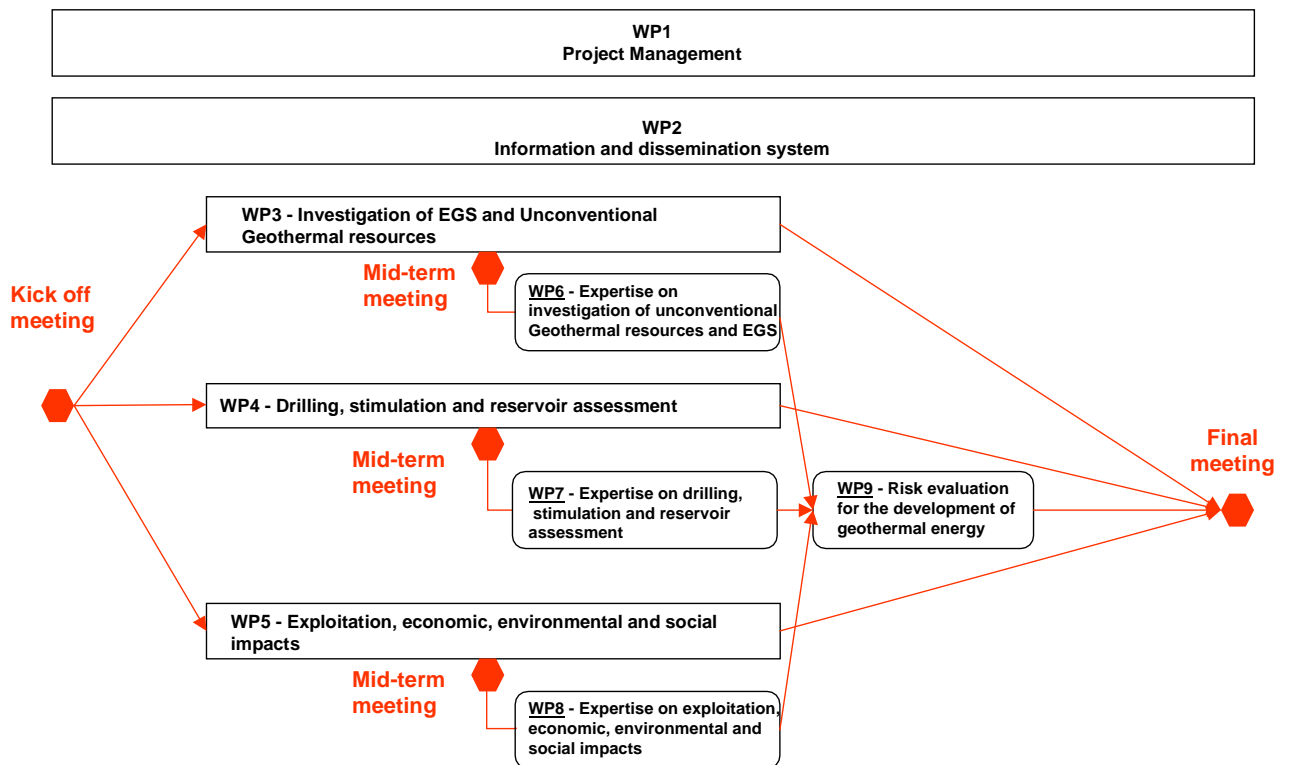


Figure 2. Project network of activity